National Institute of Environmental Health Sciences

Impacts of Hurricanes Katrina and Rita on the microbial landscape of the New Orleans area

Author(s): Sinigalliano CD, Gidley ML, Shibata T, Whitman D, Dixon TH, Laws E, Hou A, Bachoon D, Brand L, Amaral-Zettler L, Gast RJ, Steward GF, Nigro OD, Fujioka R, Betancourf WQ, Vithanage G, Mathews J, Fleming LE, Solo-Gabriele HM

Year: 2007

Journal: Proceedings of The National Academy of Sciences of The United States of America. 104 (21): 9029-9034

Abstract:

Floodwaters in New Orleans from Hurricanes Katrina and Rita were observed to contain high levels of fecal indicator bacteria and microbial pathogens, generating concern about long-term impacts of these floodwaters on the sediment and water quality of the New Orleans area and Lake Pontchartrain. We show here that fecal indicator microbe concentrations in offshore waters from Lake Pontchartrain returned to prehurricane concentrations within 2 months of the flooding induced by these hurricanes. Vibrio and Legionella species within the lake were more abundant in samples collected shortly after the floodwaters had receded compared with samples taken within the subsequent 3 months; no evidence of a long-term hurricane-induced algal bloom was observed. Giardia and Cryptosporidium were detected in canal waters. Elevated levels of fecal indicator bacteria observed in sediment could not be solely attributed to impacts from floodwaters, as both flooded and nonflooded areas exhibited elevated levels of fecal indicator bacteria. Evidence from measurements of Bifidobacterium and bacterial diversity analysis suggest that the fecal indicator bacteria observed in the sediment were from human fecal sources. Epidemiologic studies are highly recommended to evaluate the human health effects of the sediments deposited by the floodwaters.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1885622

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Quality

Extreme Weather Event: Hurricanes/Cyclones

Food/Water Quality: Pathogen

Geographic Feature:

resource focuses on specific type of geography

Freshwater, Ocean/Coastal

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease, Respiratory Effect

Infectious Disease: Airborne Disease, Foodborne/Waterborne Disease

Airborne Disease: Other Airborne Disease

Airborne Disease (other): Legionella

Foodborne/Waterborne Disease: Cryptosporidiosis, Giardiasis, Vibrioses

Foodborne/Waterborne Disease (other): Bifidobacterium

Respiratory Effect: Other Respiratory Effect

Respiratory Condition (other) : Legionella

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content